Higher
Coursework
Assessment Task

Higher Design and Manufacture
Assignment
Assessment Task

This document provides information for teachers and lecturers about the coursework component of this course in terms of the skills, knowledge and understanding that are assessed. It **must** be read in conjunction with the course specification.

Valid for session 2021-22 only.

This assessment is given to centres in strictest confidence. You must keep it in a secure place until it is used.

This edition: November 2021 (version 1.0)

Contents

Introduction

This document contains instructions for teachers and lecturers, marking instructions and instructions for candidates for the Higher Design and Manufacture assignment. You must read it in conjunction with the course specification.

This assignment has 77 marks out of a total of 157 marks available for the course assessment.

This is one of two course assessment components. The other component is a question paper.

Instructions for teachers and lecturers

Setting, conducting and marking the assignment

This assignment assesses the ability of candidates to apply design skills to develop a proposal according to a set brief.

The assignment allows candidates to demonstrate their ability to work independently and is sufficiently open and flexible to allow personalisation and choice.

The assignment is:

- set and marked by SQA
- conducted in centres under conditions specified by SQA

Evidence for the assessment is submitted to SQA.

Before candidates undertake the assignment, teachers and lecturers must ensure that they have the necessary design skills and are aware of the requirements of the assessment. Centres should give candidates the 'Instructions for candidates', which are at the end of this document.

Candidates receive:

- a choice of three briefs, from which they choose one
- a pre-populated 'research' pro forma
- a'research and specification' pro forma (the research is pre-populated and the specification section is to be completed by candidates)
- a 'planning for commercial manufacture' pro forma

Candidates are assessed on:

Area	Marks
♦ producing a specification	3 marks
♦ generating initial ideas	8 marks
♦ exploring ideas	12 marks
♦ refining ideas	6 marks
♦ applying knowledge and understanding of materials and assembly processes	10 marks
♦ applying knowledge and understanding of design	12 marks
♦ applying graphic techniques	12 marks
♦ applying modelling techniques	8 marks
♦ producing a plan for commercial manufacture	6 marks

Assessment conditions

Time

Candidates produce evidence for the assignment over an extended period, allowing them to develop and refine their work before it is presented for assessment.

Supervision, control and authentication

Teachers and lecturers must ensure that evidence submitted by a candidate is the candidate's own work. Candidates do not need to be directly supervised at all times. Teachers and lecturers must retain candidates' work between assessment sessions.

Resources

There are no restrictions on the resources that candidates can access while producing their assignment.

Reasonable assistance

Candidates must undertake the assessment independently. However, teachers and lecturers can provide reasonable assistance prior to the assessment. The assignment must be carried out without interruption by periods of learning and teaching.

If a candidate encounters difficulties at a particular part of a task, it is reasonable for teachers and lecturers to refer them to material covered in the course. Teachers and lecturers may also give candidates information on the range of materials that the centre can supply.

Candidates can seek clarification of the wording of a brief if they find it unclear. In this case, teachers and lecturers should normally give the clarification to the whole class. However, it is reasonable for teachers and lecturers to ask candidates to re-read the brief and/or their specification, giving them the opportunity to progress without providing them with specific information.

Teachers and lecturers must **not** provide candidates with:

- any additional information for the task, for example specification points
- a structured layout for the folio, for example a pro forma with headings and/or descriptions of sections
- an exemplar response similar to the task being undertaken
- alternative ideas or solutions to encourage or enhance exploration
- specific advice, including any advice that would allow candidates to gain marks for work which is not their own, such as:
  - advice on which idea-generation technique(s) to use
  - starting points for ideas
  - sketches
  - suggestions on presenting evidence

— specific information on commercial manufacturing

Evidence to be gathered

Volume

Candidates develop a proposal for **one** of the design briefs. Their submitted work must occupy a maximum of 11 A3 sheets (or equivalent), including the three pro forma sheets issued with the assignment:

- a pre-populated 'research' pro forma
- a'research and specification' pro forma (the research is pre-populated and the specification section is to be completed by candidates)
- a planning for commercial manufacture pro forma

This information indicates the volume of evidence required. There is no word count.

More information on assignment submission is available on the Higher Design and Manufacture subject page.

Marking instructions

The following marking instructions are for the Higher Design and Manufacture assignment. In line with SQA's normal practice, they are addressed to the marker. They will also be helpful for those preparing candidates for course assessment.

Candidates' evidence is submitted to SQA for external marking.

General marking principles

Always apply these general principles. Use them in conjunction with the detailed marking instructions, which identify the key features required in candidates' responses.

a Always use positive marking. This means candidates accumulate marks for the demonstration of relevant skills, knowledge and understanding; marks are not deducted for errors or omissions.

b If a specific candidate response does not seem to be covered by either the principles or detailed marking instructions, and you are uncertain how to assess it, you must seek guidance from your team leader.

c When marking the assignment, you must refer to specific descriptions of competence for different mark ranges and allocate marks for each section using a 'best fit' approach.

d The statements within the bands give an indication of what may appear in the evidence. Candidates do not need to meet every statement to achieve marks within a band.

e Do not award marks where candidates' work does not meet the lowest range statement, or where they do not provide any evidence.

Detailed marking instructions

Skill	Max mark	Make your marking judgements based on the candidate's ability to produce a specification that has detail and covers a range of issues.		
		1 mark	**2 marks**	**3 marks**
Produce a specification	3	♦ specification is limited in identifying the requirements of the proposal ♦ specification covers a limited range of issues ♦ specification contains limited detail	♦ specification adequately identifies the requirements of the proposal ♦ specification covers an adequate range of issues ♦ specification contains adequate detail	♦ specification clearly identifies the requirements of the proposal ♦ specification covers a wide range of issues ♦ specification is detailed
Further information for assessing — 'produce a specification'				
♦ Award a maximum of 1 mark for additional specification points that are drawn only from the brief and/or research. ♦ Candidates must draw their additional specification points from the research. ♦ Do not award marks for specification points that are based purely on candidates' personal opinion.				

Skill	Max mark	Make your marking judgements based on the candidate's ability to generate a range of diverse and creative ideas that address the brief.		
		1-2 marks	3-5 marks	6-8 marks
Generate initial ideas	8	♦ ideas show limited diversity ♦ ideas show limited creativity ♦ few ideas address the brief ♦ ideas have limited detail	♦ ideas show some diversity ♦ ideas show some creativity ♦ some ideas address the brief ♦ ideas have adequate detail	♦ ideas show diversity ♦ ideas show creativity ♦ ideas address the brief ♦ ideas have effective detail
Further information for assessing — 'generate initial ideas'				
♦ Marks in this section are awarded for **initial** ideas. Award marks for additional ideas under 'exploration'. ♦ To demonstrate the skills at the level of the top marks band, candidates need to generate a wide range of ideas. ♦ Award marks for candidates' creativity and their ability to generate diverse ideas. Do not award marks for iterations of the same idea. ♦ To gain marks, ideas must address the brief. Do not award marks, for example, for random shapes or forms. ♦ Do not award marks above the bottom band for copies or slight alterations of existing ideas. ♦ Candidates can communicate detail through graphics, models and/or annotations.			

Skill	Max mark	Make your marking judgements based on the candidate's ability to explore ideas towards a proposal. This includes their ability to consider alternatives to evolve the proposal and the requirements of the proposal.			
		1-3 marks	4-6 marks	7-9 marks	10-12 marks
Explore ideas	12	♦ limited exploration ♦ limited consideration of alternatives ♦ few requirements of the proposal have been considered	♦ some effective exploration ♦ some consideration of alternatives ♦ some requirements of the proposal have been considered	♦ effective exploration ♦ good consideration of alternatives ♦ most requirements of the proposal have been considered	♦ highly effective exploration ♦ clear consideration of alternatives ♦ the requirements of the proposal have been considered

Further information for assessing — 'explore ideas'

- ♦ Meaningful exploration results in improvements to initial ideas. The requirements of the brief and specification should drive the exploration. Evidence of meaningful exploration is likely to look divergent and be fuelled by the candidate's creativity, problem-solving ability and knowledge and understanding of key areas of the Higher course.
- ♦ Candidates can demonstrate exploration:
  - — throughout the folio; evidence is likely to be in the form of graphics, photographs of models and annotations
  - — through considering the requirements of the proposal
  - — through considering alternatives to the key aspects, such as functional requirements, safety, ergonomics, assembly and aesthetics, to evolve the proposal
- ♦ Exploration must be meaningful. Do not award marks for simple changes, such as rounding corners.

Skill	Max mark	Make your marking judgements based on the candidate's ability to refine ideas towards a proposal, and the range of aspects refined.		
		1-2 marks	3-4 marks	5-6 marks
Refine ideas	6	♦ limited refinement of ideas ♦ limited range of aspects of the proposal has been refined ♦ limited detail to inform plan for manufacture	♦ adequate refinement of ideas ♦ adequate range of aspects of the proposal has been refined ♦ adequate detail to inform plan for manufacture	♦ thorough refinement of ideas ♦ a range of aspects of the proposal has been refined ♦ effective detail to inform plan for manufacture
Further information for assessing — 'refine ideas'				
♦ Thorough refinement will result in a detailed proposal. Evidence of refinement is likely to look convergent and be fuelled by the candidate's ability to test, evaluate and apply knowledge and understanding of key areas of the Higher course. ♦ Refinement should lead to a level of detail that allows the candidate to produce a plan for commercial manufacture. ♦ Candidates may refine a range of aspects of the proposal. These will depend on the proposal but may include function, sizes, materials, aesthetics and assembly. ♦ Do not award marks above the bottom band for dimensioned drawing on its own.			

Skill	Max mark	Make your marking judgements based on the candidate's ability to apply knowledge and understanding of materials, manufacturing and assembly processes to develop a design proposal.			
		1-2 marks	3-5 marks	6-8 marks	9-10 marks
Apply knowledge and understanding (KU) of materials, manufacturing and assembly processes	10	♦ limited use of KU of materials, manufacturing and assembly to evaluate and inform decisions ♦ limited KU of materials, manufacturing and assembly	♦ partially effective use of KU of materials, manufacturing and assembly to inform decisions ♦ some KU of materials, manufacturing and assembly	♦ effective use of KU of materials, manufacturing and assembly to inform decisions ♦ good KU of materials, manufacturing and assembly	♦ highly effective use of KU of materials, manufacturing and assembly to inform decisions ♦ strong KU of materials, manufacturing and assembly

Further information for assessing — 'apply knowledge and understanding of materials, manufacturing and assembly processes'

- Evidence can be in the form of candidate annotations, comments, justification and evaluations.
- To gain marks in the top band, candidates must demonstrate application of detailed and appropriate knowledge and understanding of materials, manufacturing and assembly processes in the development of their design proposal.
- Candidates should apply their knowledge and understanding of materials, manufacturing and assembly processes to develop the proposal.
- Do not award marks for generic statements about materials and processes.
- Do not award marks for lists of archived facts about materials and processes.

Skill	Max mark	Make your marking judgements based on the candidate's ability to apply knowledge and understanding (KU) of design to develop a design proposal.			
		1-3 marks	4-6 marks	7-9 marks	10-12 marks
Apply knowledge and understanding (KU) of design	12	♦ limited use of KU of design to inform decisions ♦ limited KU of design	♦ partially effective use of KU of design to inform decisions ♦ some KU of design	♦ effective use of KU of design to inform decisions ♦ good KU of design	♦ highly effective use of KU of design to inform decisions ♦ strong KU of design

Further information for assessing — 'apply knowledge and understanding of design'

- Evidence can be in the form of candidate annotations, comments, graphics and evaluations.
- To gain marks in the top band, candidates must demonstrate application of detailed and appropriate knowledge and understanding of design in the development of their design proposal.
- Candidates should apply their knowledge and understanding of design to develop the proposal. Do not award marks for information covered on the 'planning for commercial manufacture' pro forma.
- Do not award marks for generic statements about design.
- Do not award marks for lists of archived facts about design.
- To achieve marks in the top band, candidates must apply design knowledge related to the key points in the specification.

Skill	Max mark	Make your marking judgements based on the candidate's ability to apply a range of appropriate graphic techniques to communicate the development and detail of the proposal.			
		1-3 marks	4-6 marks	7-9 marks	10-12 marks
Apply graphic techniques	12	♦ limited communication through graphics ♦ limited detail is communicated through graphics	♦ partially effective communication through graphics ♦ partially effective detail is communicated through graphics	♦ effective communication through graphics ♦ effective detail is communicated through graphics	♦ highly effective communication through graphics ♦ highly effective detail is communicated through graphics

Further information for assessing — 'apply graphic techniques'

- Candidates must use recognised graphic types that are appropriate to their purpose.
- Award marks for the appropriate use of graphics, not just the quality of the graphic.
- Candidates should use graphics to communicate detail where appropriate.
- To achieve marks in the top band, it is likely that the candidate will have used a range of graphic types that communicate details such as sizes, features of components and assembly.
- Candidates can use graphics generated for the 'planning for commercial manufacture' as evidence for this section.

Skill	Max mark	Make your marking judgements based on the candidate's ability to apply a range of appropriate modelling techniques to inform and communicate design decisions.		
		1-3 marks	4-6 marks	7-8 marks
Apply modelling techniques	8	♦ limited use of modelling to inform design decisions ♦ limited use of modelling to communicate design decisions	♦ adequate use of modelling to inform design decisions ♦ adequate use of modelling to communicate design decisions	♦ effective use of modelling to inform design decisions ♦ effective use of modelling to communicate design decisions
Further information for assessing — 'apply modelling techniques'				
♦ Candidates may carry out modelling at any stage of the design process. ♦ To gain marks, candidates must indicate what they have learned from the models and what decisions they have reached. ♦ To achieve marks in the top band, it is likely that the candidate will have used a range of modelling techniques. ♦ Modelling can be in the form of computer-generated and/or physical models.				

Skill	Max mark	Make your marking judgements based on the candidate's ability to produce a plan that includes details of component parts and assembly of the design proposal.		
		1-2 marks	3-4 marks	5-6 marks
Produce a plan for commercial manufacture	6	♦ limited detail of component parts ♦ limited detail of assembly ♦ product part table contains limited detail	♦ adequate detail of component parts ♦ adequate detail of assembly ♦ product part table contains adequate detail	♦ effective detail of component parts ♦ effective detail of assembly ♦ product part table contains effective detail
Further information for assessing — 'produce a plan for commercial manufacture'				
♦ The plan should communicate information required for commercial manufacture through completed product part table (part name, materials, processes), graphic(s) and/or model(s) which communicate manufacturing details and key sizes. ♦ Only award marks for evidence on the 'planning for commercial manufacture' pro forma.				

Instructions for candidates

This assessment applies to the assignment for Higher Design and Manufacture. This assignment has 77 marks out of a total of 157 marks available for the course assessment.

It assesses the following skills, knowledge and understanding:

Area	Marks
♦ producing a specification	3 marks
♦ generating initial ideas	8 marks
♦ exploring ideas	12 marks
♦ refining ideas	6 marks
♦ applying knowledge and understanding of materials and assembly processes	10 marks
♦ applying knowledge and understanding of design	12 marks
♦ applying graphic techniques	12 marks
♦ applying modelling techniques	8 marks
♦ producing a plan for commercial manufacture	6 marks

Your teacher or lecturer will let you know if there are any specific conditions for doing this assessment.

In this assessment, you have to design a solution in response to a design brief.

You will receive:

- a choice of three design briefs
- a pre-populated 'research' pro forma
- a'research and specification' pro forma (the research is pre-populated and the specification section is to be completed by candidates)
- a 'planning for commercial manufacture' pro forma

Things to remember:

- You must develop a proposal for one of the design briefs.
- Your work must be submitted on a maximum of 11 A3 sheets (or equivalent), including the pro formas ('research', 'research and specification', and 'planning for manufacture').
- Each A3 sheet must be labelled with your name, Scottish Candidate Number and page number, for example page 1 of 11.
- All the sheets must be single-sided.
- The work submitted must be your own.
- There are no restrictions on the resources you can use. You may use books, notes or the internet if you require information.
- You need to produce suitable evidence for the skills being assessed. The following table provides guidance to help you generate appropriate evidence.

Skill	What you have to do	Notes
Producing a specification	Complete the specification using the information gained from the research provided	This section is worth 3 marks. ♦ You must add your specification points to the 'research and specification' pro forma. ♦ Your specification should cover a range of issues. ♦ Your specification should include enough detail to help you develop a proposal.
Generating initial ideas	Generate a range of creative and diverse ideas	This section is worth 8 marks. ♦ Your ideas should: — show creativity — show diversity — address the brief — have enough detail to communicate that they address the brief ♦ You may use idea-generation techniques. ♦ You should aim to generate a large number of ideas quickly — your sketches or models may be rough at this stage. ♦ Your evidence for this skill may be in the form of annotated sketches, drawings, or photographs of models.
Skill	**What you have to do**	**Notes**
Exploring ideas	Carry out exploration of your ideas	This section is worth 12 marks. ♦ Your exploration should consider a wide range of alternatives. ♦ You should use the specification to help you explore. ♦ Your exploration should aim to consider alternatives for a range of features. ♦ Your exploration should significantly advance your initial idea, not make simple superficial changes. ♦ You may display your exploration through graphics, models and annotations.

Skill	What you have to do	Notes
Refining ideas	Carry out refinement of your ideas	This section is worth 6 marks. ♦ Your refinement should aim to produce a detailed proposal suitable for manufacture. ♦ You should refine a range of features of the proposal, such as function, sizes, materials, aesthetics and assembly.
Applying knowledge and understanding of materials and assembly processes	Apply your knowledge and understanding of materials and assembly processes to develop a proposal	This section is worth 10 marks. ♦ You must use your knowledge and understanding to help you develop the proposal. You will not receive marks for simply listing facts. ♦ You should apply the detailed knowledge you have gained in the Higher course. ♦ You may display your knowledge and understanding through your sketches, drawings and models, and clarify them through your written comments. ♦ You should demonstrate that you have made valid decisions based on your knowledge.

Skill	What you have to do	Notes
Applying knowledge and understanding of design	Apply your knowledge and understanding of design to develop a proposal	This section is worth 12 marks. ♦ You must use your knowledge to help you develop the proposal. You will not receive marks for simply listing facts. ♦ You should apply the detailed knowledge you have gained in the Higher course. ♦ You may display your knowledge and understanding through your sketches, drawings and models, and clarify them through your written comments. ♦ You should demonstrate that you have made valid decisions based on your knowledge.
Applying graphic techniques	Use graphics to communicate your proposal and its development	This section is worth 12 marks. ♦ Your evidence for this skill may be in the form of sketches, drawings and computer graphics throughout your folio. ♦ You should use a range of graphic types that suit their purpose. ♦ You should use graphics to communicate detail where appropriate. ♦ You may use manual and computer graphics as appropriate.
Applying modelling techniques	Use models to inform and communicate your decisions	This section is worth 8 marks. ♦ The evidence for this skill will be in the form of annotated photographs of the model(s). ♦ You must consider the purpose of model(s) before you make them. You will not receive marks for simply making models. ♦ You must clearly communicate any information gained from the model(s). ♦ You may use physical and computer-generated models as appropriate.

Skill	What you have to do	Notes
Producing a plan for commercial manufacture	Produce a plan which details the commercial manufacture for your proposal	This section is worth 6 marks. ♦ The evidence for this will be in the form of sketches, drawings and text which must be on the 'plan for commercial manufacture' pro forma. ♦ Your plan should include: — detail of component parts – this may be in the form of dimensioned drawings, sketches or photographs of models — details of assembly — a completed product part table

Design briefs

You must use one of the following briefs as a basis for your Higher Design and Manufacture assignment.

Problem situation

Stalks & Stems is a chain of garden centres, with branches across Scotland.

Stalks & Stems recently interviewed a number of their customers to get feedback on the products they offer and the services they provide. The feedback identified three design opportunities. Details of the opportunities are given on the following three pages.

You are required to develop a proposal for one of the design opportunities.

Design brief 1

Stalks & Stems' research identified that a number of customers were looking for a product which would allow them to kneel comfortably when gardening.

The customers indicated that they would like the product to help them return to a standing position after gardening and also have a place to secure their gardening equipment.

Stalks & Stems hired a company to carry out more detailed research into the brief. This research can be found on the pro forma sheets.

You must use the given research to complete the specification.

Design brief 2

The research identified that a number of customers felt that there was a lack of baby changing facilities around the centres. The company would like changing pods which include a surface for customers to safely change their baby with a degree of privacy. The proposal must have basic cleaning resources and space to manoeuvre their buggy.

Stalks & Stems hired a company to carry out more detailed research into the brief. This research can be found on the pro forma sheets.

You must use the company's research to complete the specification.

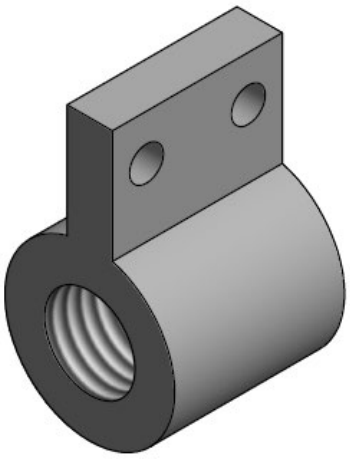
Design brief 3

Based on interviews with the customers, the company would like to introduce ‘stations’ for their education zones where young children can learn about plants and have the opportunity to pot a seedling while their parents are shopping. The station should incorporate a tablet and resources to pot a seedling.

Stalks & Stems hired a company to carry out more detailed research into the brief. This research can be found on the pro forma sheets.

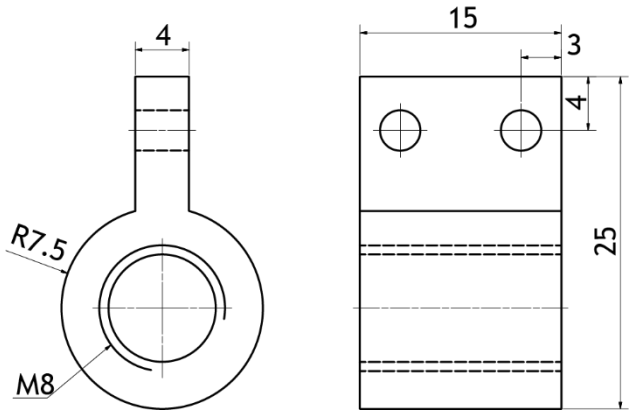
You must use the company’s research to complete the specification.

COMPONENT A — 2 sizes available



Mild steel — All sizes in mm

LARGE COMPONENT



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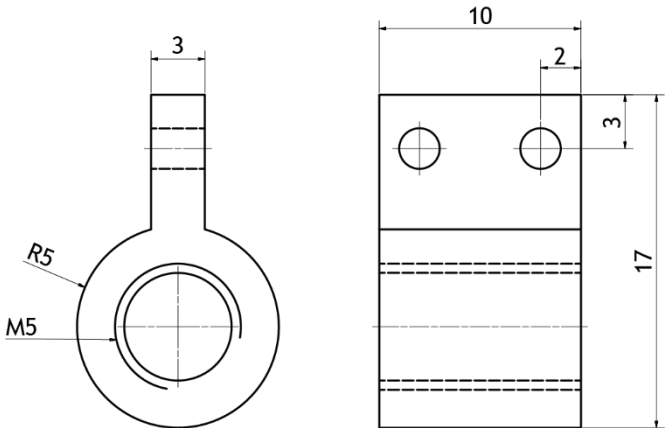
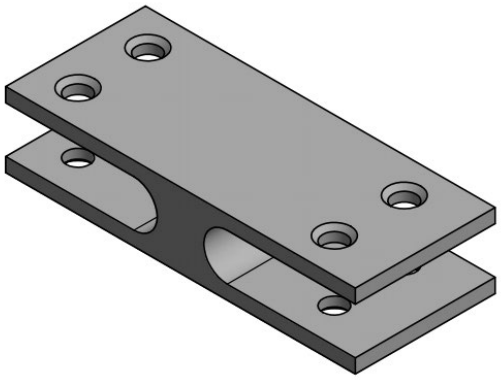
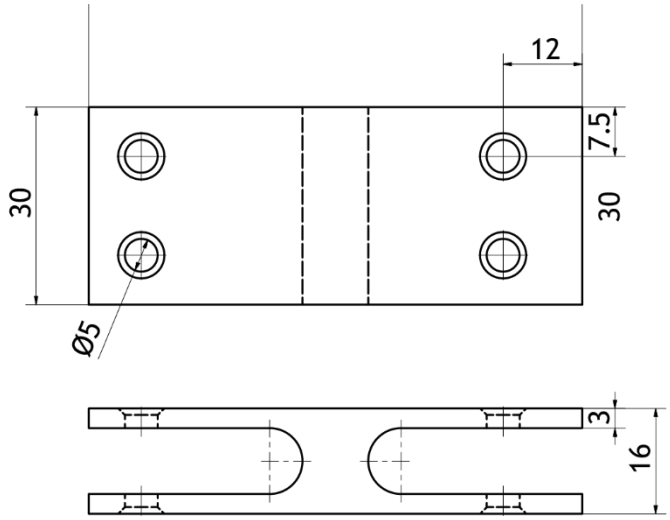


COMPONENT B — 2 sizes available



Aluminium alloy — All sizes in mm

LARGE COMPONENT



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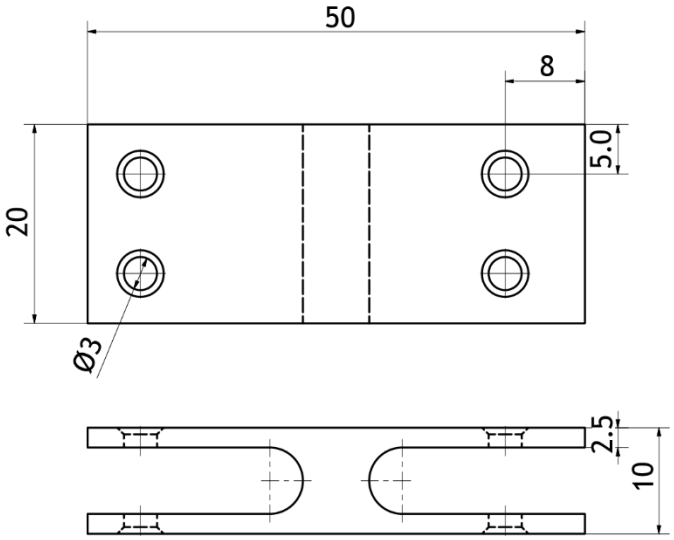
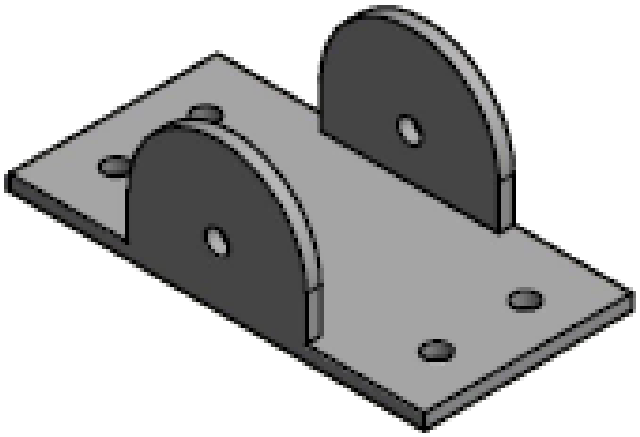
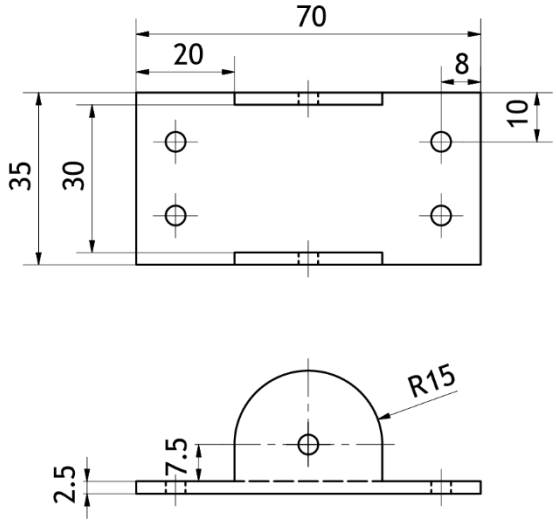


COMPONENT C — 2 sizes available



Mild steel — All sizes in mm

LARGE COMPONENT



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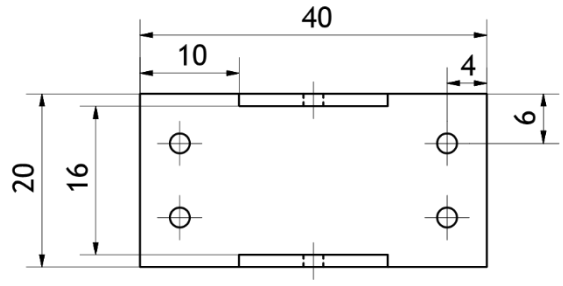

Administrative information

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History of changes

Version	Description of change	Date

Note: you are advised to check SQA's website to ensure you are using the most up-to-date version of this document.

Security and confidentiality

This document can be used by SQA approved centres for the assessment of National Courses and not for any other purpose.

